



PRESENT SCENARIO OF POLYPHARMACY IN ELDER PATIENTS: AN OVERVIEW

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ABSTRACT

A thorough investigation was conducted to comprehend the idea of polypharmacy. Since polypharmacy is becoming more and more commonplace worldwide, it is important to comprehend its definition, causes, factors, effects, prevalence, and therapeutic importance. The study was conducted using data gathered from articles published in designated databases as well as current internet data accessible via the Internet. Because they are seen to have more comorbidities than other groups, older persons are more likely to exhibit polypharmacy. Understanding polypharmacy facilitates comprehension of the danger it poses in a variety of age groups, with older age being of particular concern. It also helps to comprehend the antiseptic importance of polypharmacy by connecting the idea of proper and improper usage of polypharmacy.

Keywords: Polypharmacy, Drug-Drug Interaction, Appropriate medicine, Inappropriate medicines, etc.

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INTRODUCTION

Worldwide Polypharmacy has become a huge issue. Aging-related physiological changes (such as lower renal excretion, decreased hepatic role, declined total body water, declined lean body accumulation, and diminished vision and hearing), the prevalence of medical co-morbidities, barriers to effective communication, and multiple prescribers are the main causes of it. Additionally, polypharmacy raises healthcare expenditures and puts patients at higher risk for adverse drug reactions, drug-drug interactions (DDIs), drug non-adherence, declined functional ability & a variety of elderly syndromes. DDIs are seen as medicines-related issues that may be evaded [1]. DDI can be unsafe by increasing a drug's toxicity or lowering its effectiveness. The likelihood of DDIs increases with the number of medications administered. Moreover, the consequences of polypharmacy or inappropriate polypharmacy is the decline in the lifestyle of the patients and their family member also. In order to minimize the reason and consequences of polypharmacy which may result into severe DDIs, it is important to recognise the proper pharmacy needs with respect to patients. Hyperpolypharmacy is also been seen easily. Intake of more than ten medicines is known as hyperpolypharmacy. While polypharmacy is commonly defined as the subsequent consumption of five or more than five drugs. The study piece includes the details of polypharmacy, causes and consequences of polypharmacy[2]

Polypharmacy

The term Polypharmacy is derived from the Greek word 'polus' which means many & 'Pharmakeia' which means the utilization of drugs. This generally means the administration of several drugs to patients. Generally, the utilization of five or more than five drug on the daily basis is referred as Polypharmacy. However, medicines are important for the patients who are suffering from co-morbidities which may be acute or chronic but sometime this polypharmacy may result into unwelcomed health condition which are the result of the prescribed medicines[3]. Inappropriate polypharmacy is the term used to describe situations in which taking drugs continuously becomes unnecessary. Polypharmacy is common in the elderly due to several medical conditions, increased mortality risk, non-adherence, drug interactions, and hospitalisation. Now a days, polypharmacy has become a health burden. A study performed by Das *et.al* (2017) states that Compared to monotherapy (Rs. 1936.56 [\pm 252.07]), polypharmacy had a relatively higher medication cost (Rs. 3568.92 [\pm 348.54]). Patients receiving polypharmacy as opposed to monotherapy had noticeably higher standards of life in the public, psychological, and physical dimensions. Additionally, Supplemental medicines from the list of polypharmacy can also be important for the therapeutical conditions but the highlight is that

these supplemental drug can be act as effective medicines as well as harmful medicines also [4]. The resultant can be extremely burden for the family also as it can result into severe adverse effects, chances of clinical readmission and even death. Appropriate medications that enhance the quality of life with the least amount of side effects can be used in polypharmacy[5]. It might be difficult to ensure drug safety in polypharmacy. Nevertheless, a number of examples have demonstrated that polypharmacy is both useful and essential. In order to address the issues related to incorrect polypharmacy and make it clinically meaningful or beneficial, it is necessary to utilise polypharmacy appropriately[6].

CAUSES OF POLYPHARMACY

Adverse effects (ADE): It directs to harm brought on by a medicines used at recommended dosages as well as injuries brought on by drug usage. Between 5% and 28% of acute geriatric medical hospitalisations are caused by ADEs. One of the major repercussions of elder individuals using medications inappropriately is preventable adverse drug experiences (ADEs). Cardiovascular medications, anticoagulants, hypoglycemics, diuretics, and NSAIDs are the medication types most frequently linked to avoidable ADEs. Because ageing causes metabolic alternation & steady medication consent, adverse drug effects are more ordinary in older persons. The danger is worse as more medicines are used[7].

Drug interactions: The risk of DDI, or the therapeutic or medicinal reaction to the management of a drug combination that deviates from the response anticipated from the established things of these two drugs when administered separately, is increased when many medicines are used. The majority of drug-drug interactions involve cardiovascular medications. The most frequent side effects associated with drug-drug interactions are hypotension, abrupt renal failure, and neuropsychological (delirium). For example, anti-inflammatory drugs can decrease kidney function and raise blood pressure[8].

Prescribing Cascades: When added drugs are advised to take care of the adverse effects (ADE) of former medicines by getting wrong impression about the adverse drug effect as a new therapeutical situation.

Unsuitable therapy or nonadherence: Particularly when connected with optical or cognitive decrease.

The risk for hip fracture: Some case-control study have verified that polypharmacy is an independent threat factor for hip fractures in elder adults. However, the quantity of medicines taken may have been a sign of a elevated chance of exposure to certain drug classes, such as central nervous system (CNS)-active drugs linked to falls.

Use of Over-the-Counter and Complementary Medications: Apply has surged in the last ten years, and research indicates that older people are among the most common users of these drugs. Less than half of the patients talk to their doctors about using herbal supplements, other items, or supplementary therapy. Their use raises safety concerns, such as the possibility of herb-drug interactions[9].

Transitions of Care: Between an institutional environment, such as a nursing home, and a person's home. Patients who have medication mistakes frequently run the risk of developing polypharmacy. This is due to the fact that patients frequently begin new drugs or discontinue ones they were already on, which can lead to numerous medication mistakes and unfavourable effects[10].

Changes in Pharmacokinetics Associated with Aging: This monitors absorption of drugs, the distribution, metabolism & elimination of drugs. Crumbling-related physiological modifications lead to a number of alternations in the pharmacokinetics & pharmacodynamics of medications, which raise the possibility of unfavourable drug effects. Most favourable pharmaceutical treatment for older patients requires careful consideration of starting dosage alternation, episodic medication reconciliation & list analysis[11].

PREVALANCE OF POLYPHARMACY

Elderly people sometimes take more than one prescription for chronic diseases that don't stop. This can lead to polypharmacy, which is when five to nine medications are used concurrently. Hyperpharmacy is when ten medications are taken concurrently. Many studies have looked at the frequency of polypharmacy, hyperpolypharmacy, and improper prescription usage among elderly people in developing nations. In modern India, polypharmacy and hyperpolypharmacy are extraordinarily common[12].

Among the elderly in India, roughly 28% use inappropriate drugs. As a result, appropriate measures must be taken to encourage prudent senior prescription in India[13].

DETERMINANTS OF POLYPHARMACY

There are several patients related factors, diseases or clinical related factors, prescribing related factors & Medicare accessibility related feature which are leading to polypharmacy and intensifying its prevalence. Detail descriptions of factors are as follow:

Factor related to patients

There is a high probability of prescribing several medicines to person who is suffering with several chronic diseases therefore, polypharmacy is generally seen in older patients. They are

at higher risk of polypharmacy due to the fact that they are referred several specialists and subspecialists. According to a study performed, approximately 90% of patients are taking long term care and are consuming at least five medications daily[14]. Age has an important effect on the prescription for polypharmacy, but gender is still major concern as studies have shown that female is at higher risk as compared to males.

The risk of polypharmacy is also dependent on the socio-demographic features. The economic status as well as educational status are under the socioeconomical features. The risk associated with this feature is studied by Jennifer Doening et.al, they said that it is contentious to say low standard of educations is associated with polypharmacy. On the other side, probability of polypharmacy is increasing because of patient related variables which consists of smoking, low level of physical activity, obesity, etc. [15]. Urban peoples are more prone towards polypharmacy than rural populations. Patients may support therapeutic changes in their prescriptions or descriptions, or they may do so because they think taking more drugs will make them healthier, which can lead to polypharmacy. Changing doctors or obtaining multiple prescriptions from different doctors may also impede the reevaluation of a prior diagnosis and lead to inappropriate polypharmacy[16].

Clinical related factors

Clinical issues are also connected to polypharmacy. One frequent side effect of cardiovascular disease, such as heart failure, hypertension, and coronary ischemia disease, is polypharmacy. Additionally linked to gastrointestinal disorders including ulcerative colitis and upset stomach is polypharmacy. According to a study, congestive heart failure & continual renal illness were amongst the conditions that frequently required polypharmacy [17].

Prescribing related factors

A number of medical professionals' actions could also promote polypharmacy. Therefore, variables that support polypharmacy may include inadequate ongoing education, medicine refill requests, preferences, personal beliefs, and a lack of contact between specialists & general practitioners.

Polypharmacy was also predicted by the use of drugs without a valid reason, primarily sedatives/hypnotics, laxatives, antidepressants & analgesics. Depending on whether the usage of medications is appropriate, these many circumstances may cause patients to engage in appropriate or inappropriate polypharmacy [18].

Healthcare accessibility related factors

A person's risk of polypharmacy increased if they had seen a doctor during the previous three months or had been admitted to the hospital within the previous six months. It was also noted

that having numerous contributor or additional insurances is a sign of polypharmacy, and that seeing a chief care physician at least 5 times a year amplified the risk of polypharmacy by 15

METHODS FOR MITIGATING POLYPHARMACY

It is important to differentiate high risk drug and if possible, must be avoided in older patients an can be replaced with the alternative drugs. There are some drugs which needs to administered carefully in elderly patients.

1. Anticholinergic medications
2. Sedatives/Anxiolytics
3. Narcotics
4. Cardiovascular medications
5. Former general medications (Long-acting sulfonylureas, nitrofurantoin, NSAIDs metoclopramide, proton pump inhibitors, testosterone hormone supplements).

POSSIBLE WAYS FOR MITIGATING INCLUDES

Improved physician responsiveness

Healthcare professionals can work together to disseminate information on the need of drug reviews and the damage that arises from using polypharmacy inappropriately. One component of the proposal may be making safe medication management training sessions mandatory. Inappropriate polypharmacy might entail prescribing the wrong amount, the wrong kind, or neither. The screening tools for older people's prescriptions (STOPP) and the screening tool to alert clinicians to the correct therapy (START) are the procedures used to identify improper polypharmacy.

Improved adherence & Drugs management

It is important to identify strategies for improving drug adherence and ensuring appropriate polypharmacy. Elderly people can benefit from pill dispensers and medication compliance tools. Patients can take their medications more regularly with the use of smartphone applications and reminders [13].

Crosspathy reduction

Alternative Indian medicinal systems such as Ayurveda, Unani, herbal remedies, and Siddha are still in use today, but to a reduced extent. India's diverse medical culture may increase the likelihood of drug interactions as a result of self-medication. Crosspathy is the practise of using ayurveda, homoeopathic, siddha, and unani remedies along with allopathic ones. The patient should let the physician know ahead of time about any past medical experiences they may have had from different providers. Appropriate polypharmacy measures must be followed to guarantee safe prescription.

Decline in self-medications

The term "self-medication" describes the unmonitored use of pharmaceuticals, including non-prescription drugs, conventional medications, herbal remedies, supplements, etc. It is important to make an effort to comprehend the risks associated with self-medication. In order to greatly reduce the psychological effects of self-medication, doctors should be aware of their patients' perspectives.

CONCLUSION

It can be concluded from the review that, Polypharmacy is quite common in adult populations, especially in older adult populations. As the study shows, it may also be explained by the common exposure in patients who are hospitalised, inpatients, and frequent attendees of outpatient settings. This is in addition to accounting for age group. Understanding the ramifications is also essential if it is to be significant for the clinical location. Making sure that the people who are most likely to be exposed to polypharmacy receive the best treatment possible can be made easier with an understanding of the frequency of polypharmacy & some of the variables that give to it. In order to fulfil patients' needs, clinicians must regularly evaluate patients to ascertain if they require polypharmacy and reduce the use of unnecessary polypharmacy.

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